

Lightweight, High-Temperature Radiator Panels, Phase I

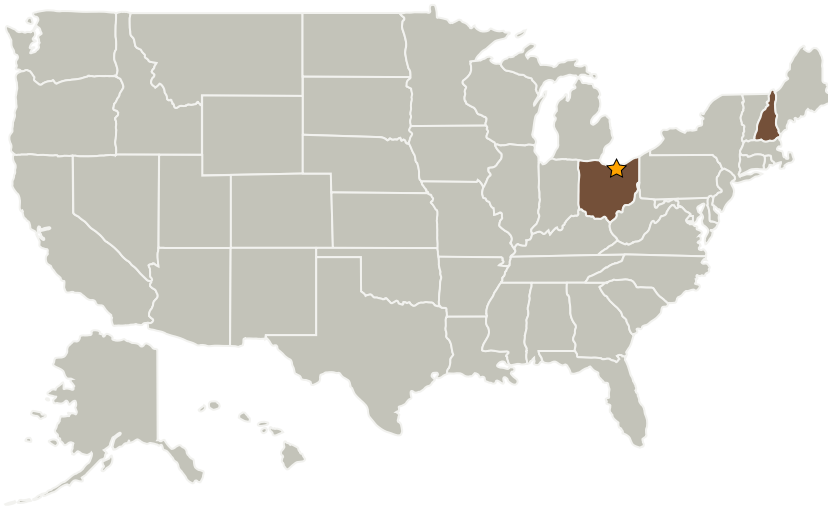
Completed Technology Project (2004 - 2004)



Project Introduction

Lightweight, high-temperature radiators are needed for future, high-efficiency power conversion systems for Nuclear Electric Propulsion (NEP). Creare has developed flexible radiators that are extremely lightweight, stowable in small volumes, and deployable with small forces and incorporate micrometeorite protection. The present technology is limited to 350 K operating temperature due to the use of thermoplastic adhesives in the construction. In this proposal we plan to develop a high-temperature radiator panel to extend the range of operation needed for NEP systems. Our innovation is a novel material combination and fabrication method that enables radiator panels with low weight, high fin efficiency, and adequate strength at high temperature. Our lightweight radiator panel offers a factor of four reduction in weight compared with present honeycomb structures and will approach 1 kg/m². In Phase I, we will prove the feasibility of the fabrication process and demonstrate the ability of the panel to operate at high temperature. During Phase II, we will develop a subscale radiator to demonstrate the advantages of the technology.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center (GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Creare LLC	Supporting Organization	Industry	Hanover, New Hampshire



Lightweight, High-Temperature Radiator Panels, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Lightweight, High-Temperature Radiator Panels, Phase I

Completed Technology Project (2004 - 2004)



Primary U.S. Work Locations

New Hampshire

Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Christopher Crowley

Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.1 Cryogenic Systems
 - └ TX14.1.3 Thermal Conditioning for Sensors, Instruments, and High Efficiency Electric Motors